DELIVERING SUSTAINABLE BUILDING STRATEGIES IN MALAYSIA: STAKEHOLDERS' BARRIERS AND ASPIRATIONS

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ABSTRACT

In Malaysia there is both top-down and bottom-up pressure to deliver a sustainable built environment. However, most new projects display few sustainability features, explaining the continuous presence of, and increasing problems related to, the environment in Malaysia. This paper presents nine categories of barriers and four categories of measures to overcome the barriers and to promote sustainable building practices, drawn from qualitative research undertaken with thirty Malaysian building stakeholders via in-depth, semi-structured interviews. The primary barriers that were identified by the stakeholders are: 1) a lack of expressed interest in the clients' requirements; 2) a lack of political will, legislation and enforcement; 3) a lack of technical understanding among project team members; 4) a lack of consideration of sustainability measures by project team members; and 5) real and perceived costs. Whilst measures suggested by the stakeholders are related to the government and regulatory stakeholders, research and education sector, private sector, and clients of the construction industry. The paper concludes that regional characteristics need to be reflected in any sustainability assessment methodologies in order to encourage sustainable development locally.

Keywords: *sustainable building, sustainable development, construction industry, barriers, actions, building stakeholders, Malaysia*

1 INTRODUCTION

Economically, Malaysia has one of the fastest growing construction industries in the world; and currently categorized as a "newly industrialized country" (Mankiw, 2008) or an "emerging market/economy" (Dow Jones Indexes, 2011). However, the industry activities have contributed crucial environmental and social impacts in the country. The exploitation of resources, uncontrolled, and improperly planned development has resulted in the deterioration of the environment (Department of Environment Malaysia, 1997). On top of this, the industry's reliance on foreign labour has resulted in low level of productivity and quality (Chan, 2009; CIDB Malaysia, 2007a). Further, occupational safety is normally compromised, explaining the higher rate of work-related accidents (Abdul-Aziz, 2001; CIDB Malaysia, 2007a).

These predicaments reflect the imbalance between environmental and socio-economic development; thus the benefits of development may be negated by the costs of environmental and social impacts. If this is the case, then the current Malaysian construction and building practices can be deemed as not sustainable. The adoption of sustainable development (i.e. balancing economic development with environmental protection and social development) in the Malaysian construction industry is therefore very timely and crucial.

Accordingly, Malaysia has a plethora of policies and legislations relating to environmental, social and economic sustainability of the construction industry. In fact, it was noted that Malaysia has one of the best sets of environmental legislations, comparable even with those of some developed countries (Sani & Mohd Sham, 2007). Further, the principles or thrusts of government development plans such as Draft Kuala Lumpur City Plan 2020 (Kuala Lumpur City Hall, 2004) and Construction Industry Master Plan 2006-2015 (CIDB Malaysia, 2007a) place priority on sustainable development as the path in strategizing the development of cities or the country as a whole. By the same token, a professional-driven building rating system i.e. Green Building Index (GBI) has recently been developed and implemented to promote sustainability in the Malaysian building sector (GSB, 2009). In other words, it is the priority of the country in general, and the construction industry in particular, to strike the necessary balance between the socio-economic and ecological systems to avoid further environmental damage.

As such, one might wish to question why there are continuous presence of, and increasing problems related to, the environment in Malaysia. It appears that the majority of new developments in Malaysia demonstrate very few sustainability principles, processes and outcomes. The question then arises of why is this so. Given such a strong policy drive, what is stopping sustainable building developments from being realized in practice?

This question was one of those addressed in a three-year research that aimed to develop an appropriate assessment framework that enables sustainability to be addressed and incorporated in building development, relevant to emerging/developing[1] countries, particularly the Malaysian context (Shari, 2011); hence, this paper presents part of the overall results of the research. It was hypothesized that a new framework could be made acceptable and integral part of the local building practice if it reflects an understanding of the local stakeholders' primary concerns in pursuing sustainable building development. Accordingly, this paper aims to study the viewpoints of Malaysian building stakeholders about their current challenges in playing a better role, as well as their aspirations to promote sustainable office buildings development in the country.

This paper complements previous research on barriers to the implementation of sustainability that take a theoretical and classificatory approach (Trudgill, 1990) and those that investigate current practice (Blair & Evans, 2004; Elmualim*, et al.*, 2010; Häkkinen & Belloni, 2011). The paper first outlines the method used in the research. Then the barriers to achieving sustainability that were identified by the stakeholders are described. It then presents the measures suggested by the stakeholders to lower those barriers and to promote sustainability in the Malaysian construction industry. The paper concludes with some thoughts about how a new building sustainability assessment framework can be made an acceptable and integral part of the local building practice.

2 METHODOLOGY

It was anticipated that different stakeholder groups would have different views about different challenges and motivations for pursuing sustainable outcomes; therefore, these views were explored through interviews and then analysed to define gaps that need to be bridged to promote sustainable building development and assessment in Malaysia.

The target populations of this study were the stakeholder groups of commercial buildings, from both private and public sectors, currently practicing in Kuala Lumpur, Selangor and Putrajaya. A total of 50 stakeholders were purposefully selected as participants and were sent an invitation email. However, only 30 stakeholders agreed to be interviewed and these consist of 12 consultants, 5 developers/owners; 3 builders; 4 facility managers; and 6 policy makers/regulators. The interviews were undertaken from early January to early March 2009.

[1] "Emerging/developing" is used in this research to describe countries whose economies have not reached advanced status, irrespective of whether the literature refers to it as "developing" only or other terms or terminologies.

The purposive sampling, particularly judgment sampling, was used to provide the means to investigate a specialized population of stakeholders who have experienced in the relevant field for more than ten years. According to Neuman (2006), purposive sampling provides information-rich, key informants for in-depth study and the opportunity to gain insight and understanding from well-situated participants. A sample size of 20 to 30 is deemed adequate to enable internal generalisation in a qualitative study (Leech, 2005). However, the findings may not be employed to make inferences on other construction industry stakeholders not included here.

3 BARRIERS TO SUSTAINABLE BUILDING PRACTICES

The study identified 91 barriers and these are then categorized into 9 categories, as presented in Figure 1. They are listed in order of frequency of citation, but this measure must be treated with caution for a number of reasons. Firstly, some barriers were applicable to more stakeholder groups than others, and therefore would be expected to appear more often. Secondly, although some barriers were reported infrequently, when they did occur they had a major impact on the achievement of sustainability. Hence, no relationship should be inferred between frequency and importance of the barriers in hindering sustainability. However, it is interesting to note which reasons appeared most regularly in stakeholders' interviews. Each of the barriers is described, in turn, below.

3.1 Sustainability measure was not required by the client

By far the most common explanation (32% of the replies) for the lack of achievement of a sustainability objective was total absence or lack of expressed interest in the client's requirements of the development. Architects, contractors, and developers all agreed that clients' desire to incorporate sustainability measure into their building projects was an essential element in overcoming the time and cost barriers inherent in adding these features. Clients could be the purchasers of the schemes or tenants. In the speculative developments, the clients are defined as 'the market', and currently there is little perceived market demand for sustainable offices. Even if architects or developers wanted to incorporate sustainability features, it would not be achieved without some interests shown by clients. For example, in Malaysia,

> *Local tenants won't say, "If the buildings are not energy efficient, we won't move in." If they say things like that, like it or not, we have to deliver them. Not only us but the whole industry will do it. That's number one – there is no demand (Dev/Female/2).*

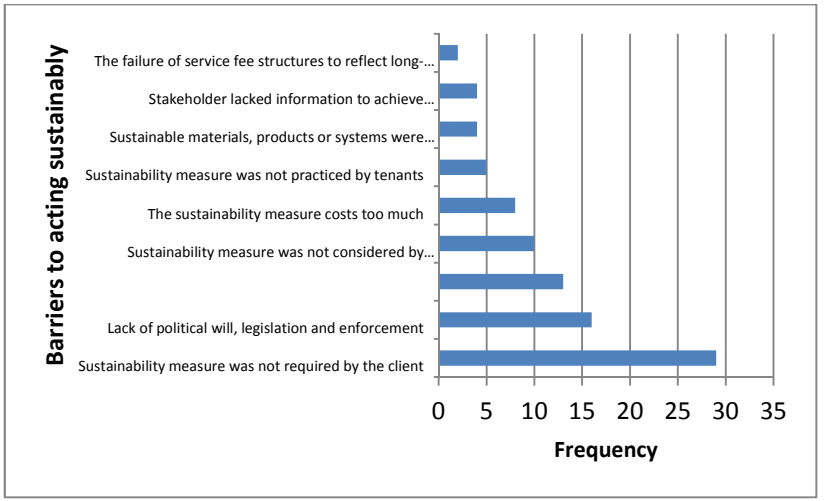

Figure 1: Barriers experienced by stakeholders to achieving sustainability. Note: Total barriers cited by 30 interviewees = 91

Two contributing factors to the lack of demand were, (1) lack of education or awareness about the benefits and opportunities of green/sustainable buildings; and (2) perception of sustainable building practices will increase costs and reduce profits. The need to make additional investments in machinery, equipment and training is very often an excuse not to comply with standards and practices based on principles of sustainability. While it is true that the change to more sustainable building practices will incur some costs, there are also associated savings resulting from efficient resource use, higher productivity and reduced risk. The challenge is to find ways of capitalizing on these benefits of sustainability to increase profitability.

3.2 Lack of political will, legislation and enforcement

The second most cited category of barriers falls under "Lack of political will, legislation and enforcement", which represented 18% of the replies. Interviewees specifically indicated that the majority of politicians and regulatory stakeholders had a very limited understanding of sustainable development, its implications for the development paths and infrastructure choices they promise to their electorates, and the role construction sector can and should play. Hence, they became ineffective force for advocacy and raising awareness amongst the public. Consequently, little changes have been brought about in policy, legislation and implementation that sustainable building practices require.

3.3 Project team members lacked technical understanding

Around 14% of the barriers were related to all members of the core project teams – including consultants, project managers, facility managers and building operators – who often did not have adequate technical understanding of, or knowledge to actually implement, sustainable practices. This was mainly due to a general lack of interest in undertaking education programmes and technical trainings on sustainable building resulted from lack of awareness on sustainability issues in general.

By the same token, it was revealed that poor maintenance management that minimized operational efficiency of building systems was one of the building sector's predicaments. This dire situation in Malaysia was correlated to the poor capacity of facility managers and building operators, as one interviewee explained:

> *Many FM [facility management] companies are ignorant in doing preventive maintenance...This caused the building systems to go through major repairs, overhaul or replacements after [the first] three years of operation… Many FM companies do not have proper checklists on how to ensure systematic maintenance of every part and component. …We have the most advanced technology but we don't have the people who know how to operate and maintain it (FacMgr/Male/2).*

This interviewee believed that operation and maintenance manuals were normally provided; however, they were often too brief or not detailed enough to facilitate efficient operation and maintenance especially for imported advanced technology equipment. The interviewee also bemoaned the fact that poor maintenance management had been contributed by the involvement of FM companies with inexperienced and unqualified personnel. A mechanical engineer further added that the case was also applicable to consultants as many of them "lacked consideration and technical understanding on operation and maintenance issues during the design phase" (Engr/Male/1). Further, the vast majority of construction and facility management firms were small enterprises that rely on outsourcing personnel as required. This has severely affected skills training and the retention of expertise in the industry as construction workers become highly mobile.

3.4 Sustainability measure was not considered by project team members

The fourth most cited category of barriers falls under "Sustainability measure was not considered by project team members" which represents 11% of the replies. It was usually not the case that operational or practical difficulties thwarted good intentions, but simply that sustainability issues were never on the agenda. Several interviewees suggested that the lack of interest in sustainable building on the part of other members of their project teams was a barrier to more widespread adoption of sustainable building practices. The difference between the two barrier rankings (i.e. barriers 3 and 4) suggests that some, but not all, of the lack of technical understanding can be explained by a lack of interest. This indicates that some building professionals are open to learning about sustainable building, but have not had adequate training in it.

3.5 Sustainability measures cost too much

Around 9% of the barriers were about the high investment needed which was claimed as a challenge to the routine use of sustainable strategies in their professions. These barriers were cited by stakeholders from the private sector who often prioritized the need to quickly recoup an investment over qualitative improvements and life cycle cost savings. In many instances,

although cost differentials had not been thoroughly investigated, developers were certain that anything other than 'business as usual' would be more expensive. A building environmental consultant pointed out that the cost of providing environmentally sustainable buildings and developments was about 10-15% higher than for standard schemes and was not convinced there was a widespread demand for such buildings especially during economic downturns. This was supported by two speculative developers of large scale developments who were doubtful about the market's willingness to pay higher rents for such buildings. In other words, developers would be more willing to implement sustainable solutions if they could charge higher rents or gain a marketing edge through sustainability.

3.6 Other barriers

To a lesser extent, the following barriers were also mentioned:

- Sustainability measure was not practiced by tenant (6%) due to wrong attitude and the lack of awareness in conserving energy and water, and reducing waste.
- Sustainability materials, products or systems were not available in the area (4%) or mostly imported hence, very expensive.
- Stakeholder lacked information to achieve sustainable measure (4%); hence, a 'safe' solution was normally opted for, explaining why many sustainability objectives simply fell by the wayside. Where information was available, it had not been successfully integrated and effectively disseminated and promoted.
- The failure of service fee structures (which based on overall construction cost instead of performance) to reflect long-term savings (2%). These offered little incentive for building professionals to pursue higher performance standards or reward for their moderation and/or innovation in building or system designs.

4 SUGGESTIONS TO REMOVE BARRIERS AND MOVE FORWARD

Interviewees were also given the opportunity to share their opinions on actions to reduce the barriers and to promote sustainability in the Malaysian construction industry. Altogether 126 actions were identified; these were then grouped into 4 different categories: 1) Actions by government and regulatory stakeholders; 2) Actions by the research and education sector; 3) Actions by the private sector; and 4) Actions by clients (refer to Table 1). Details of these are explained below.

4.1 Actions by government and regulatory stakeholders

The most cited actions fall under the responsibility of "government and regulatory stakeholders" which represent 47.6% of the replies. The stakeholders included in this area were national and local government, regulatory bodies such as standards organizations and those bodies responsible for regulating the professionals and the industry sectors. The majority (28.6%) of the suggestions under this category aimed to encourage and support the implementation of sustainable building practices such as: 1) providing financial incentives to developers and builders who may need assistance to cope with increased up-front costs of resource-efficient technologies in their projects; 2) reviewing policies, legislation and regulations on a continuous basis, and deregulating or developing new regulations as our understanding of sustainability grows; and 3) setting up systems to make sure that regulations are enforced.

Other suggestions included: 1) building the capacity within the public sector to raise the level of understanding among government officials and politicians; hence, bringing the changes in policy, legislation and implementation that sustainable building practices will require (7.1%); and 2) participating in monitoring and evaluation schemes, and setting up legal structures for the implementation (6.3%).

4.2 Actions by the research and education sector

The second most cited category of actions falls under the scope of "research and education sector" which represents 27% of the replies. The majority (25.4%) of the suggestions concerned the capacity-building, particularly by raising the awareness. This could be done by introducing sustainable building construction as an integral part of built environment courses taught at tertiary institutions by which the new curricula is monitored by professional bodies responsible for accreditation such as Malaysian Board of Architects (LAM).

Table 1: Summary of Suggestions to Reduce Barriers and Move Forward Recorded in the Interviews. Note: Total suggestions given by 30 interviewees = 126

	Category of Local Stakeholders' Suggestions to Reduce Barriers and Move Forward	No. of times recorded	
		N	%
Actions by Government and Regulatory Stakeholders		**60**	**47.6**
1	Encouraging and Supporting Implementation		
	Provide effective incentives and disincentives	22	28.6
	Change standards and regulations to support sustainable building practices	6	
	Enforce regulations	3	
	Reduce subsidies	3	
	Conduct promotions	2	
2	Capacity-building		
	Raise awareness among government officials and politicians	5	7.1
	Introduce compulsory continued professional education	2	
	Create an advisory (sustainable building 'champion') body	2	
3	Monitoring and Evaluation		6.3
	Participate in monitoring and assessment schemes	8	
4	Internal housekeeping		
	Lead by example	3	3.2
	Change professional fee system	1	
5	Partnerships and Cooperation	2	1.6
6	Access to Funding	1	0.8
Actions by the Research and Education Sector		**34**	**27**
7	Capacity-building		
	Raise awareness	26	25.4
	Expand learning offerings	3	
	Technology transfer	2	
	Build internal capacity	1	
8	Partnerships and Cooperation		
	With industry sectors, non-governmental organizations and government	2	1.6
Actions by the Private Sector		**25**	**19.8**
9	Encouraging and Supporting Implementation		
	Create demand	6	10.2
	Use new technologies and efficient building systems	5	
	Commercialize new services, materials and tools	2	
10	Capacity-building		
	Support the development of external capacity	3	3.2
	Enable continued organizational learning	1	
11	Internal housekeeping		
	Assess risk and benefits	2	3.2
	Foster more efficient use of resources and reduce environmental impact	2	
12	Monitoring and Evaluation		1.6

	Participate in certification scheme	2	
13	Access to Funding	1	0.8
14	Partnerships and Cooperation	1	0.8
Actions by Clients		**7**	**5.6**
15	Capacity-building		3.2
	Develop own understanding of sustainability	4	
16	Monitoring and Evaluation		2.4
	Participate in certification scheme	2	
	Monitor benefits and impacts	1	
Total number of suggestions recorded		**126**	**100**

There were also recommendations for this sector to expand the scope of its offerings by including continuous professional development (CPD) programmes that provide a credible accreditation system for 'green' or 'sustainable' building professionals. To promote sustainability issues with the general public that eventually constitutes the client base, a number of public awareness campaigns or outreach programmes in schools and the media were suggested.

4.3 Actions by the private sector

Thirdly, the interviewees suggested actions by the "private sector" to reduce the sustainability barriers, which represent 19.8% of the replies. Stakeholders in this category included built environment practitioners, contractors, developers and manufacturers of construction materials, components and tools. Under this category, 10.2% of the suggestions focused on the responsibilities of the private sector to implement sustainable building practices, for example: 1) assist with the promotion and commercialization of new services, materials and tools, and help their originators to create viable businesses; 2) create demand for efficient and healthier buildings; and 3) use more sustainable technologies and processes in its own business activities.

4.4 Actions by the clients

Finally, the remaining 5.6% of the suggestions fall under the responsibility of "clients" who have direct influence on the market for sustainability by demanding products and services to support sustainable building practices. Generally, interviewees felt that education for the clients or public at large about the principles and concept of sustainable building was even more essential than technical training. For instance, an architect called for more education about "what sustainability means, how it relates to their lives and businesses and the benefits of demanding more sustainable options" (Arch/Female/2). Others (2.4%) advocated clients to monitor the costs, savings and other benefits and impacts resulting from purchasing and using more sustainable services and products. This experience can then be used to motivate other clients to adopt procurement systems that demand sustainable construction and thus expand the market.

5 DISCUSSION AND CONCLUSIONS

The paper has drawn on in-depth qualitative research undertaken with thirty stakeholders from various backgrounds in the Malaysian construction industry. The research has identified a number of key barriers that are hindering progress as well as suggestions for a way forward that could assist stakeholders in mainstreaming sustainable building construction. Apparently, the most frequently cited barrier for the stakeholders is simply the lack of interest among clients to demand for a sustainable built environment. End users can affect demand directly through the commission of a building, or indirectly by choosing to buy speculatively developed sustainable buildings in more sustainable locations. However, this study indicates that either directly or indirectly, there seems to be little demand for sustainable buildings by their users.

The second most cited barrier is the lack of political will, explaining the lack of legislation to mandate energy efficiency or environmental preservation in building codes and standards. This means, sustainability rarely constitutes criteria or requirements for plan approval, land use or land-subdivision. Furthermore, Malaysian standards remain as guidelines with no means of legislative enforcement for non-compliance. Other barriers cited include lack of technical understanding among project team members, explaining the absence of sustainability consideration on their agenda. Exacerbating this is the non-sustainable practices among tenants in building operations and maintenance.

Clearly, most of the barriers mentioned so far are 'knowledge-related'. This implies that there is a skills and knowledge gap amongst key players, which needs to be addressed with some urgency. In fact, this gap has not gone unnoticed in Malaysia and the government has a number of initiatives in place to offer training, professional development and information in environmental issues for various levels of society including built environment professionals. For example, Construction Industry Development Board (CIDB) Malaysia has organised several continuing education activities to systematically address and prioritise environmental needs in the construction sector (CIDB Malaysia, 2007b).

However, there are also practical barriers related to the availability of sustainable materials, products and technologies that need to be addressed. The vast majority of these products and technologies currently require importation, resulting in higher initial costs and perceived risks due to the lack of local technical support. Performance demonstration of such products is a major concern, as many of them do not offer a historic performance data set, are not familiar to consultants and practitioners, and/or demand substantial cultural or technological assimilation. These demand intense coordination among local/foreign manufacturers to promote the use and virtues of these products and technologies. There is also a need to stimulate demand for such products in order to increase supplies and make such technologies more mainstream in the local context. Efforts should also be undertaken to make construction and demolition materials more marketable in Malaysia (Megat Rus Kamarani, 2008). Related to this barrier is that of costs or perceived cost which is frequently pointed out as one of the major barriers for sustainable construction implementation within the country. It is argued in this research that in the Malaysian context, a sustainable building simply cannot cost more than a regular building. The current perception from the private sector, however, is that in most cases it does cost more, for many reasons (Shafii & Othman, 2007). Here, there is a need for better comparative information; otherwise, professional consultants or developers would be unlikely to take what they see as risks to achieve more sustainable outcomes.

These results offer some support to the notion that sustainable construction practices suffer wide gaps in emerging/developing countries in which construction sector still maintains a large share in total domestic production; however, cannot afford sustainability at any cost (Bon & Hutchinson, 2000). The question remained is what measures might be effective to move the industry players to close the current gaps of sustainable building practices and to reach significantly higher performance levels, and in a broader range of performance issues than just energy.

In total, the study identifies 126 measures/actions related to the government and regulatory stakeholders, research and education sector, private sector, and clients of the construction industry (in this order of priority). In terms of government-related actions, majority of the suggestions are associated with financial incentives, since a financial inducement is likely to be effective in an environment where financial return is a primary objective. Bon and Hutchinson (2000) argue that market-oriented policies or economic measures, such as incentives and taxes, are much more effective in delivering sustainable construction than those which involve legal regulation and impositions. In this regard, it is also argued that in order to reverse the current barriers related to the availability of sustainable materials and products in the local market, importation facilitation and financing local, low-cost development of non-available or high-cost products and technologies, until local supply capacity is fully achieved should be part of the solutions (Gomes & Gomes da Silva, 2005).

There are also substantial amount of suggestions related to the research and education sector. Majority of them urged for environmental awareness and responsibility to be incorporated into schools' and universities' curricula as

well as into continuous education programmes for the construction industry players. This raises the question as to whether local educational/training institutions have the relevant capacity. Previous studies related to architectural education for instance, found that existing architecture curricula in local universities are not readily accommodative to sustainability issues and there is a lack of sustainability exposure among fellow educators especially those with first-degree qualifications (Shari & Jaafar, 2006). With regard to the private sectors, most of the suggestions call for offering or creating demand for ecologically and socially responsible materials and services, and using more sustainable technologies and efficient building systems. In doing so, players on the demand side (investors and tenants) are suggested to be convinced of the advantages and need for improved building performance. All of the aforementioned actions will be an on-going matter of information and education.

From the foregoing discussion, it is sufficient to assert that it is not possible to use international assessment methodologies to assess sustainability and to encourage sustainable development locally. Certain development patterns from the developed world are not always applicable in the emerging/developing world (Gomes & Gomes da Silva, 2005). Instead, more regional values that reflect the country's conditions highlighted earlier should be considered. Although emerging/developing countries have many conditions and issues in common, they have different climatic, cultural and economic conditions. This highlights the importance of regional characteristics to be reflected in assessment benchmarks and requirements, in order to make any assessment frameworks more socially acceptable and integral in the local construction industry.

Further research is now required to test the generalisation of the barriers in this research, and to identify strategies to overcome them. Unless the practical problems of implementing sustainable development policies are understood, a sustainable built environment is unlikely to be delivered.

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